U.S. Department
of Transportation
Federal Aviation
Administration

Advisory Circular

Subject:	INSTALLATION DETAILS FOR LAND AND HOLD SHORT LIGHTING SYSTEMS	**Date:**	12/30/99	**AC No.:**	150/5340-29
		Initiated by:	AAS-200	**Change:**	

1. **PURPOSE.** This advisory circular (AC) contains the Federal Aviation Administration (FAA) standards for the design and installation of land and hold short lighting systems.

2. **APPLICATION.** The design and installation criteria contained herein are recommended by the FAA for all applications involving land and hold short lighting systems. However, FAA standards, where noted, are mandatory for those projects receiving Federal funds under the airport grant assistance program or the passenger facility charge program.

3. **METRICS.** To promote an orderly transition to metric units, this AC contains both English and metric dimensions. The metric conversions may not be exact metric equivalents, and until there is an official changeover to the metric system, the English dimensions will govern.

4. **COMMENTS.** Comments or suggestions for improvements to this AC should be sent to:

Federal Aviation Administration
Attn: Manager, Engineering and
Specifications Division, AAS-200
800 Independence Ave., SW
Washington, DC 2059 1

David L. Bennett
Director of Airport Safety and Standards

5. **COPIES OF THIS AC.** The Office of Airport Safety and Standards is in the process of making ACs within their purview available to the public through the Internet. These ACs may be found through the FAA home page at: www.faa.gov. To get to the advisory circular area, select "FAA Organizations," then "Airports," followed by "Advisory Circulars." A printed copy of this and other ACs may be ordered from the:

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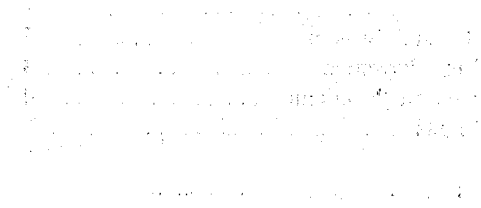


INSTALLATION DETAILS FOR LAND AND HOLD SHORT LIGHTING SYSTEMS

1. INTRODUCTION. Land and hold short lighting systems are installed to indicate the location of hold-short points on runways approved for land and hold short operations (LAHSO).

2. **BACKGROUND.** FAA Notice 7110.199, *Land and Hold Short Operations (LAHSO),* provides operational requirements for lighting systems and other visual navigational aids that are required to conduct LAHSO.

3. DEFINITIONS.

a. Available Landing Distance (ALD) - That portion of a runway available for landing roll-out for aircraft cleared for LAHSO. This distance is measured from the landing threshold to the hold-short point.

b. Hold-Short Point - A point on the runway beyond which a landing aircraft with a LAHSO clearance is not authorized to cross.

c. Land and Hold Short Operations (LAHSO) - These operations include landing and holding short of an intersecting runway, a taxiway, a predetermined point, or an approach/departure flightpath.

4. IMPLEMENTATION CRITERIA. Install land and hold short lighting systems at locations described in the letter of agreement between the airport authority and the local Airport Traffic Control Tower (ATCT). See FAA Notice 7110.199 for information on the letter of agreement.

5. CONFIGURATION. A land and hold short lighting system consists of a row of six or seven in-pavement unidirectional pulsing white lights installed across the runway at the hold-short point. A 6-light bar is standard for new installations. A 7-light bar is standard for airports with existing 5-light bars. Five-light bars should be upgraded to meet the standard by adding a light fixture on each end of the existing installation, with the same spacing as the existing fixtures. Selection of the 6- or 7-light bar is not based on the presence of runway centerline lights.

a. Location. The light fixtures should be centered on an imaginary line which is parallel to, and 2 feet (610 mm), -0 ft (0 mm), +3 feet (915 mm), prior to the holding side of the runway holding position marking, as shown in Appendix 2, Figure 1. Individual fixtures may vary from the imaginary line up to ±2 inches (51 mm) in a direction parallel to the runway centerline. Fixtures should be installed so that their nearest edge is approximately 2 feet (610 mm) from any rigid pavement joint or another fixture. In the event of a conflict between any of the light fixtures and undesirable areas, such as rigid pavement joints, etc., which cannot be resolved through the 3 foot (9 15 mm) longitudinal tolerance or by varying the lateral spacing as specified in the following paragraph, the holding position marking and the entire land and hold short lighting system should be moved sufficiently toward the landing threshold (shortening the available landing distance) to resolve the conflict.

b. Lateral Spacing of Light Fixtures. The total width of the row of lights (measured between the centers of the outboard fixtures) should be 50% (±10%) of the defined runway width for 6-light bars, as shown in Appendix 2, Figure 1, and 65% (+5%, -15%) for 7-light bars,. The remaining lights should be uniformly spaced between the outboard fixtures within a tolerance of ±2 inches (51 mm). The light bar should be symmetrically disposed about the runway centerline for 6-light bars, or about the center fixture for 7-light bars. The center fixture in '1-light bars should be located laterally on the runway in accordance with the criteria for runway centerline lights. *See* AC 150/5340-4, *Installation Details for Runway Centerline and Touchdown Zone Lighting Systems.*

6. **DESIGN.** Land and hold short lighting systems are designed for installation in new or existing rigid or flexible pavements. When possible, installation of land and hold short lighting systems should be done during construction of the runway or when the pavement is being overlaid. This would allow for the installation of L-868 light bases interconnected by conduit, which is preferred. In this system, the isolation transformers are contained within the light bases.

a. Light Fixtures and Electrical Cables. One of two types of fixtures may be selected for the land and hold short lighting system: 1) L-850F, unidirectional white light, or 2) L-850A unidirectional white light, in accordance with AC 150/5345-46, *Specification for Runway and Taxiway Light Fixtures.* The *fixtures* are similar except that the L-850F fixture includes a second lamp which illuminates in the event the first lamp fails. The system should be designed for the appropriate pavement condition listed below:

(1) New pavements. In new pavements, provide access to electrical cables and isolation transformers through the use of conduits and L-868 light bases. This type of installation will reduce downtime and repair costs when the underground circuits require maintenance. See Appendix 2, Figures 3, and 4.

(2) Pavement overlays. A base and conduit system as described in the preceding paragraph may be used. Two-section bases and spacer rings to reach proper elevation may be required. See Appendix 2, Figure 4.

(3) Existing pavements. Provide recesses or holes for direct-mounted light fixtures or fixtures installed on bases. Isolation transformers are located at the side of the runway. No. 10 AWG wire is run between the transformers and the lights through shallow sawed wireways (saw kerfs) in the pavement surface. See Appendix 2, Figures 5 **and 6.**

Alternatively, L-868 bases and conduit systems may be retrofitted into existing pavements. Isolation transformers are located within the bases.

b. **Electrical System.** An L-884 Power and Control Unit (PCU), described in AC 150/5345-54, *Specification for L-884 Power and Control Unit for Land and Hold Short Lighting Systems,* is typically used to power land and hold short lighting systems. The PCU pulses the lights by varying the voltage on the primary side of the series circuit shown in Appendix 2, Figure 7. The light fixtures should be isolated from the series circuit via 6.6/6.6 ampere isolation transformers specified in AC 150/5345-47, *Isolation Transformers for Airport Lighting Systems.*

c. Power and Control Unit (PCU). PCUs may be installed either indoors (Style I) in a vault or outdoors (Style II) near the lighting system, as required. The PCUs may be relatively heavy and, when installed outdoors, must be located as far from the runway as possible to present the minimum possible obstruction to aircraft. They must be mounted at the minimum possible height, and must be located outside the runway safety area, taxiway safety area, and taxiway object free area. If not so located, they must be frangibly mounted with couplings conforming to FAA Dwg C-6046. The safety and object free areas are defined in AC 150/5300-13, *Airport Design.*

d. Control System. The system should have provisions for local and remote control. Local control ("on/off" and intensity control) should be provided at the PCU. Remote control ("on/off' exclusively) should be provided in the Airport Traffic Control Tower (ATCT). If there are two or more land and hold short lighting systems installed on the airport, each system should be installed on dedicated circuits with their own sets of L-884 PCUs. However, two lighting systems installed on the same runway (e.g., installed on opposite sides of an intersecting runway and facing in opposite directions) may be powered from the same set of PCUs through the use of L-847 circuit selector switches specified in AC 150/5345-5, *Circuit Selector Switch.* The L-847 switches should be configured so that only one lighting system at a time may be selected. Appendix 2, Figure 7 shows a typical block diagram of the LAHSO lighting system.

(1) Automatic Intensity Control. When the PCUs are under remote control, intensity selection is automatic and is derived from PCU photoelectric control inputs and sensing of the intensity of the runway edge lights which are installed on the same runway as the land **and** hold short lighting system. The required intensity levels are described in AC 150/5345-54.

(2) Photocell. A photocell is used to switch the PCU into day or night mode. The photocell is an integral part of a PCU designed for outdoor installation. With the PCU installed, the photocell should be faced north. A PCU installed indoor should have a remotely mounted photocell in a readily accessible outdoor location. The photocell should be installed facing north and be clearly labeled for ease of maintenance. If surrounding airport lights activate a photocell, then it should be turned as necessary to prevent false activation. It is not recommended to gang multiple PCUs on a single photocell, because it would create a single point source of failure.

e. **Remote Control.** Remote control should be provided in the ATCT through an appropriate L-821 control panel in accordance with AC 150/5345-3, *Specification for L-821 Panels for Remote Control of Airport Lighting.* Where possible, remote control switches should be integrated into existing airfield lighting control panels. Two common methods used- to control L-884 PCUs and other equipment are described below.

(1) 120 Volts AC. Where the distance between the remote control panel and the vault is not great enough to cause excessive voltage drop in the control leads, the standard control panel switches to operate the control relays directly should be used. Operating relays supplying power to the L-884 PCUs must have coils rated for 120 volts AC. A #12 AWG control cable should be used to connect the control panel to the power supply equipment in the vault. The curves in Appendix 2, Figure 8, are used to determine the maximum permissible separation between the control panel and the vault for 120-volt AC control. Special pilot low burden auxiliary relays, having proper coil resistance to reduce control

anchor is placed. A recommended practice is to connect each base to the conduit system with a length of liquid-tight flexible conduit as in Appendix 2, Figure 3. Flexible conduit will allow adjustments in light base alignment before the concrete anchor is placed. Care must be taken while placing the concrete anchor that neither the jig nor the light base alignment is disturbed. The jig must remain in place until the concrete has set. During paving operations the light base may be fitted with a steel cover (mudplate). See Appendix 2, Figure 2. After the paving train 'has cleared the light base, remove excess concrete from the top of the base, and the edge of the opening around the base should be finished to a smooth radius. The surface of the pavement around the light base must be level with the surrounding pavement; dished and mounded areas are not acceptable. After the pavement has hardened, check the elevation of the top flange in relation to the finished surface. It may be necessary to install a flange ring, or flange and spacer ring, to bring the light fixture to correct elevation. Next, install primary cable, transformers, and connectors. Connect light fixture to secondary cable. An "O" ring gasket should be installed and the holddown bolts should be tightened to manufacturer's recommendations. If the paving technique utilizes more than one lift to achieve the required thickness, the above procedure is altered as follows; a sectional light base is required and, after the bottom section has been installed as described above, the first paving lift should be constructed. The flange is then cleaned and the next section is installed with a sealant equal to RTV- 118 between flanges, and tightened in place. The paving proceeds, and the fixture is installed as above. Base and conduit systems are subject to water intrusion. Consider base elevations, base heights, conduit slopes, drain holes, and other provisions to facilitate removal of water from the base and conduit system.

(2) New Flexible Pavement. A sectional base is required for flexible pavement. The bottom section of the light base (including concrete anchor) and the conduit system are installed in the pavement base as described in the preceding paragraph.

NOTE: Because of the loads placed' on the cover plate during paving, a plywood cover should be a minimum of 5/8-inch (16 mm) thick. If the top section will not be installed right away, a mudplate (1/8 inch (3 mm) galvanized steel cover) should be used.

It is then paved over. The light base, concrete anchor, and conduit backfill must not be higher than the base surface. After the paving is completed, a 2-inch (51 mm) hole is bored to accurately locate the center punch mark of the bottom section cover plate. This hole is used to measure the actual distance from the pavement surface to the top of the cover or mudplate. A top section should be obtained, with a height that will accommodate the fixture and flange ring, and spacer ring if necessary. When the top section is received, a hole 1 inch (25 mm) larger than the diameter of the fixture should be drilled and the top section, flange ring, light fixture, and any spacer rings installed as described above. The space between the walls of the hole up to the top of the top section should be filled with liquid P-606 sealant that is compatible with asphalt. After the P-606 has cured, the remaining space should be filled with P-605, Type III sealant (which is compatible with asphalt) up to the top of the mud dam, if installed, or otherwise up to the top of the flange ring. See Appendix 2, Figure 4.

(3) Flexible Overlay. The installation of a light base and conduit system in a pavement to be overlaid is similar to that of a new flexible pavement installation, except the bottom section of the light base and the conduit are set in openings made in the existing pavement. The required concrete anchor and encasement of the conduit will be similar to that described in the preceding paragraph. The use of a short length of liquid-tight flexible conduit is necessary to allow proper alignment. The remainder of the installation is as described in the preceding paragraph.

(4) **Rigid Overlay.** The installation of a light base and conduit system requires a combination of the techniques described in paragraphs 8c(1) and 8c(3). The bases and conduit are installed as in paragraph 8c(3); concrete is placed as in paragraph 8c(1).

d. **Installation of Direct-Mounted Fixtures.** While the installation of direct-mounted fixtures is becoming less common, there are instances where they are still applicable, e.g., overlays. However, they are not recommended for flexible pavement in very cold climates.

(1) Rigid Pavement. Drill holes or recesses in the pavement to accommodate the light fixtures. Saw wireways to accommodate electrical circuits. See Appendix 2, Figure 6, 9, 10, and 11 for typical installation details.

(a) Pavement Drilling and Sawing. Provide approximately M-inch (6 mm) clearance for sealer material between the bottom and sides of the inset base receptacle and the recess. Provide extra depth where sawed wireways cross pavement joints. See Appendix 2, Figure 6 for detail.

1 Prior to placing the inset base receptacle in the drilled hole, clean all external surfaces to assure an adequate bond between fixture, sealer, and pavement. Sand blast if necessary. Avoid handling the fixtures by the leads.

2 Orient the fixture and arrange the leads properly with respect to their splicing position in the wireway. Use temporary dams, if required, for blocking the wireway entrance into the drilled hole. The dams will retain the sealer during the setting of the inset base receptacle. The orientation tolerance for the base is ±1/2 degree. Rugged, well-designed jigs are required to assure proper azimuth, elevation, and level.

3 Cover the bottom of the inset base receptacle with a paste-type adhesive material. Place a sufficient quantity of paste in the drilled hole. Place the base in the drilled hole to force adhesive up the sides of the base at least 1/8 inch (3 mm). Care must be taken to work out entrapped air. Use a liquid sealer (paragraph 7e) to fill the space between the base and the sides of the hole. Liquid sealer should be applied only between the inset base receptacle and the sides of the hole, and should not be applied between the sides of the hole and the top assembly.

(b) Wireways. Prior to the installation of the wires in the pavement, chamfer or round to 2-inch (50 mm) radius, the vertical edges of the wireways at intersections and comers. See Appendix 2, Figure 6. Sandblast and clean wireways to insure proper bond between pavement material and the sealer. If wireways have been wet-sawed, flush these wireways with a high velocity stream of water immediately after sawing. Prior to installation of the sealer, the wireways must be dry and clean.

(c) Wires. Place the #10 AWG THWN wires in the wireways from the transformers near the runway edge to the light fixture leads. An adequate number of wedges, clips, or similar devices should be used to hold the wires in place at least 1/2 inch (13 m) below the pavement'surface. The spacing between wedges, clips, etc., should not exceed 3 feet (900 mm). Wood wedges and plugs are not acceptable. Install the top of the wedges below the pavement surface. Splice the light fixture leads to the #10 AWG wires. Use pre-insulated connectors. Make the crimped splice with a tool that requires a complete crimp before releasing. Stagger the location of the splices. Permit no splices in the single conductor wires except at each fixture or L-869 junction box. If the installation is made in- stages, tape or seal the ends of exposed wires to prevent the entrance of moisture. Seal the wires in the wireways with Item P-606 material. Apply in accordance with AC 150/5370-10 and the following steps:

1 Pour sealer in wireway until surface of wire is covered.

2 If recommended by the manufacturer, pour clean sand into the liquid sealer until a slight amount of sand shows on the surface. Use clean sand that can pass through a Number 40 sieve.

3 Fill the remainder of the wireway with liquid sealer to between 1/8 inch (3 mm) and 1/4 inch (6 mm) below the pavement surface.

(2) Flexible Pavement. Install direct-mounted light fixtures and wires in flexible pavement in a manner similar to the installation procedures for rigid pavements (paragraph 8d(1)) with the following precautions:

(a) Clean the holes and wireways immediately before installation so that the clean, dry aggregate of the pavement is exposed.

(b) Use sealant which is compatible with asphalt.

(c) Mix the P-606 sealant (for use on fixtures) so that it sets up within 15 minutes.

(d) Use sealant that conforms to P-606 to seal wires in wireways.

(e) Junction boxes may be installed on runways where overlays are anticipated. See Appendix 2, Figure 11. When additional pavement is required, the inset light is removed and the base is fitted with a cover. Paving is then applied over the light base and junction box. When the paving is completed, expose the junction box and light base by coring. Remove covers. Proceed as described in Paragraph 8c(2).

e. Cable Installation.

(1) General. Although primary cables and control cables may be direct buried, it is preferable to install them in conduit in accordance with Item L-108.

(2) Primary Cable Installation. Install primary cable in a trench from the regulator into a light base and transformer housing in the field. Provide slack cable in each light base and transformer housing to permit connections of the primary cable and the isolation transformer primary leads to be made above ground. Seal the cable entrance of the light base transformer housing with squeeze connectors, where specified. These squeeze connectors are provided with a rubber bushing of the correct size to fit the outside diameter of the cable. Tighten the squeeze connectors to provide a watertight seal without deforming the insulation and jacket of the cable. Tape the ends of cables to prevent the entry of moisture

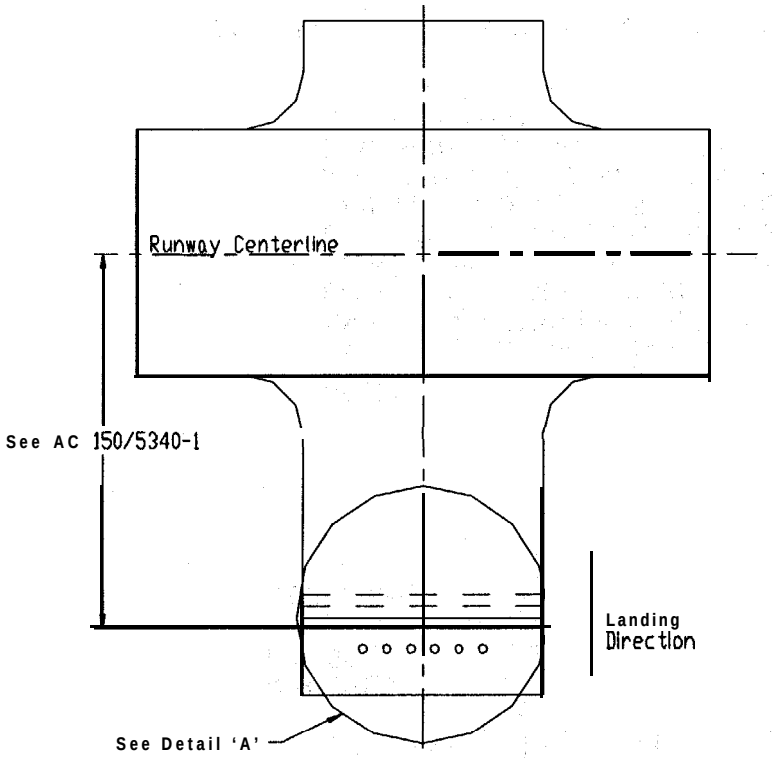
APPENDIX 1. BIBLIOGRAPHY

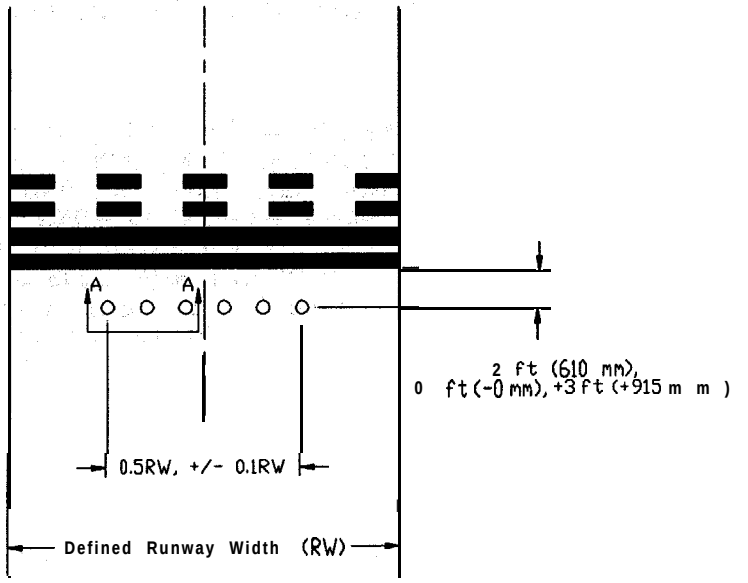
1. See Paragraph 5 on the cover of this AC for information on how to order or download copies of the following advisory circulars.

Number	Subject
AC 150/5300-13	Airport Design
AC 15015340-l	Standards for Airport Markings
AC 150/5340-4	Installation Details for Runway Centerline and Touchdown Zone Lighting Systems
AC 150/5340-26	Maintenance of Airport Visual Aid Facilities
AC 150/5345-3	Specification for L-821 Panels for Remote Control of Airport Lighting
AC 150/5345-5	Circuit Selector Switch
AC 150/5345-7	Specification for L-824 Underground Electrical Cable for Airport Lighting Circuits
AC 150/5345-13	Specification for L-841 Auxiliary Relay Cabinet Assembly for Pilot Control of Airport Lighting Circuits
AC 150/5345-26	Specification for L-823 Plug and Receptacle, Cable Connectors
AC 150/5345-42	Specification for Airport Light Bases, Transformer Housings, Junction Boxes, and Accessories
AC 150/5345-46	Specification for Runway and Taxiway Light Fixtures
AC 150/5345-47	Isolation Transformers for Airport Lighting Systems
AC 150/5345-49	Specification L-854, Radio Control Equipment
AC 150/5345-53	Airport Lighting Equipment Certification Program
AC 150/5345-54	Specification for L-884 Power and Control Unit for Land and Hold Short Lighting Systems
AC 150/5370-10	Standards for Specifying Construction of Airports
FAA Dwg C-6046	Frangible Coupling Type I and Type IA, Details
Notice 7110.199	Land and Hold Short Operations (LAHSO)

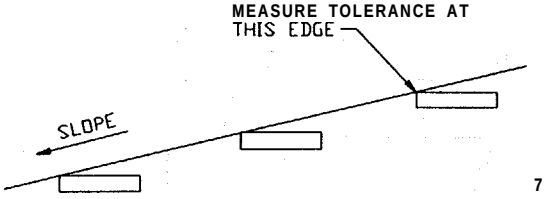
2. To obtain copies of AC 150/5370-10, mail your request to: New Orders, Superintendent of Documents, P.O. Box 37 1954, Pittsburgh, PA 15250-7954. Refer to the document being requested as: SN 050-007-00821-0. Send check or money order with your request made payable to the Superintendent of Documents in the amount of $23.00 for each copy. No c.o.d. orders accepted. This AC may also be downloaded from the Airports Internet site at no cost.

3. FAA Notice 7110.199 may be downloaded from the Internet at: www.faa.gov/ats/ato/12014.htm.





Detail A (NTS)



SECTION A-A

NOTES:

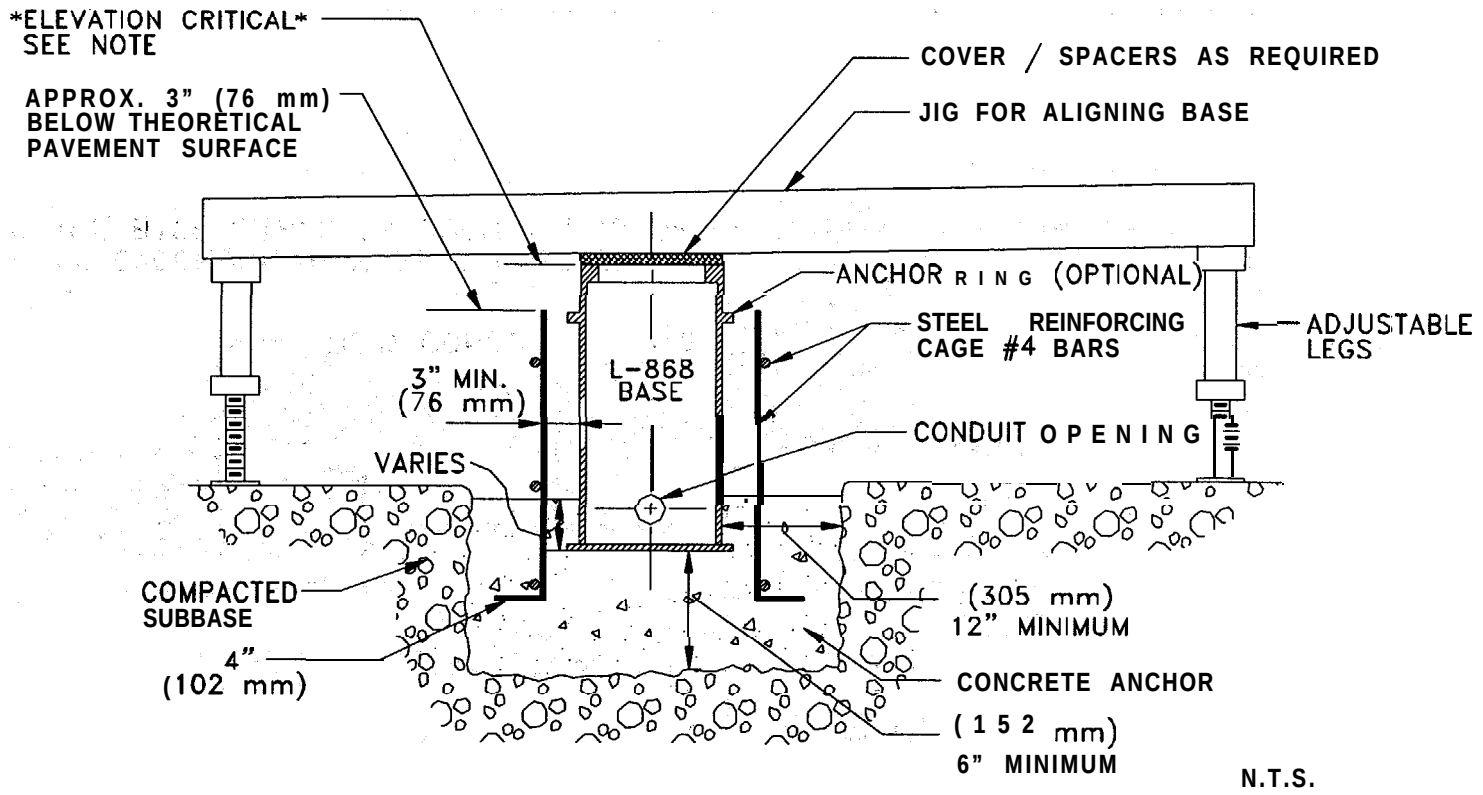
1. THE LIGHT FIXTURES ARE UNIFORMLY SPACED (WITHIN A TOLERANCE OF +/-2 INCHES (51 mm)) BETWEEN THE OUTBOARD LIGHT FIXTURES.

2. THE LIGHTING SYSTEM IS SYMMETRICAL ABOUT THE RUNWAY CENTERLINE FOR 6-LIGHT SYSTEMS. 7-LIGHT SYSTEMS ARE SYMMETRICAL ABOUT THE CENTER FIXTURE, WHICH IS LOCATED IN ACCORDANCE WITH THE CRITERIA FOR RUNWAY CENTERLINE LIGHTS. SEE A C 150/5340-4.

3. SEE PARAGRAPH 5B FOR LATERAL SPACING OF 7-LIGHT SYSTEMS.

4. SEE PARAGRAPH 8B FOR FIXTURE ALIGNMENT.

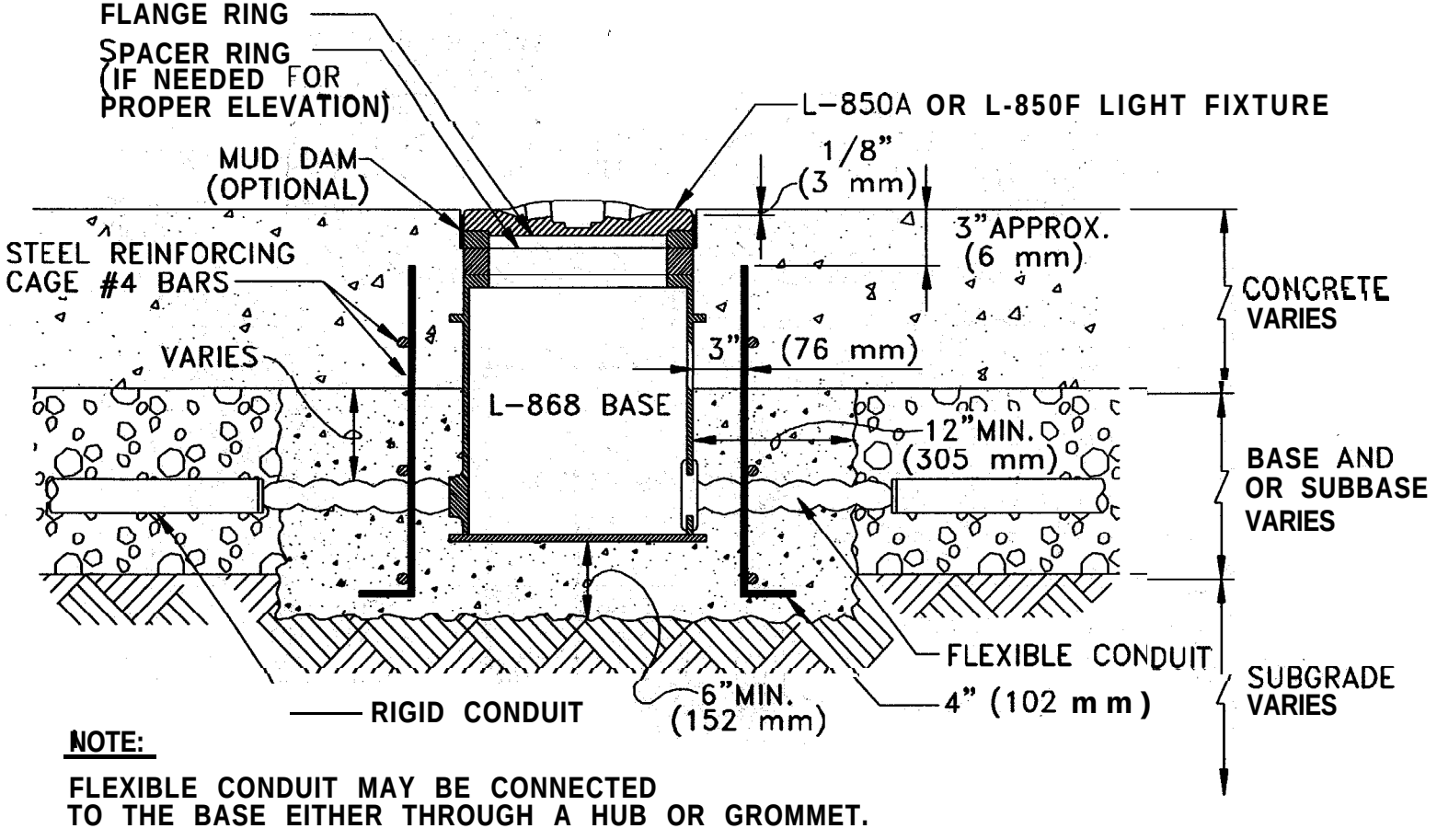
FIGURE 1. TYPICAL LAYOUT FOR LAND AND HOLD SHORT LIGHTS



NOTE:

BASE MUST BE POSITIONED TO PERMIT PASSAGE OF PAVING MACHINE AND TO ACCOMMODATE FLANGE RING AND FIXTURE. IF THE BASE ELEVATION IS SET TOO HIGH IT WILL INTERFERE WITH PAVING OPERATIONS AND RESULT IN COSTLY CORRECTIVE ACTION. IF THE BASE IS SET TOO LOW, THICKER FLANGE RINGS OR SPACER RINGS CAN BE USED FOR CORRECTIONS. IN SETTING THE BASE ELEVATION, ALLOW FOR AT LEAST 1/2 INCH (13 mm) VARIATION IN THEORETICAL PAVEMENT SURFACE ELEVATION PLUS 1/4 INCH (6 mm) ADDITIONAL SAFETY MARGIN.

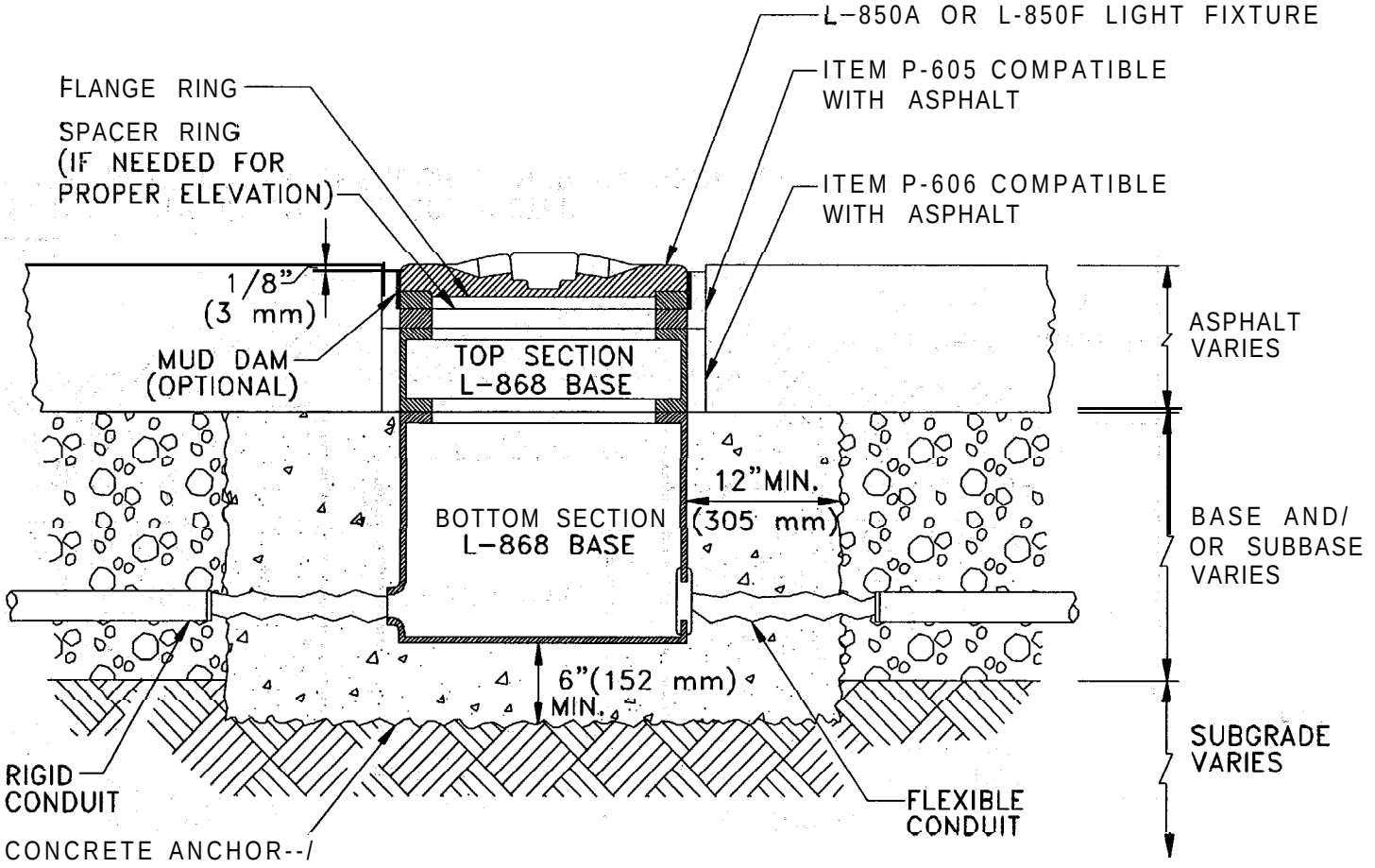
FIGURE 2. USE OF ALIGNMENT JIG. NO REFERENCE EDGE AVAILABLE, BASE AND CONDUIT SYSTEM



NOTE:

FLEXIBLE CONDUIT MAY BE CONNECTED TO THE BASE EITHER THROUGH A HUB OR GROMMET.

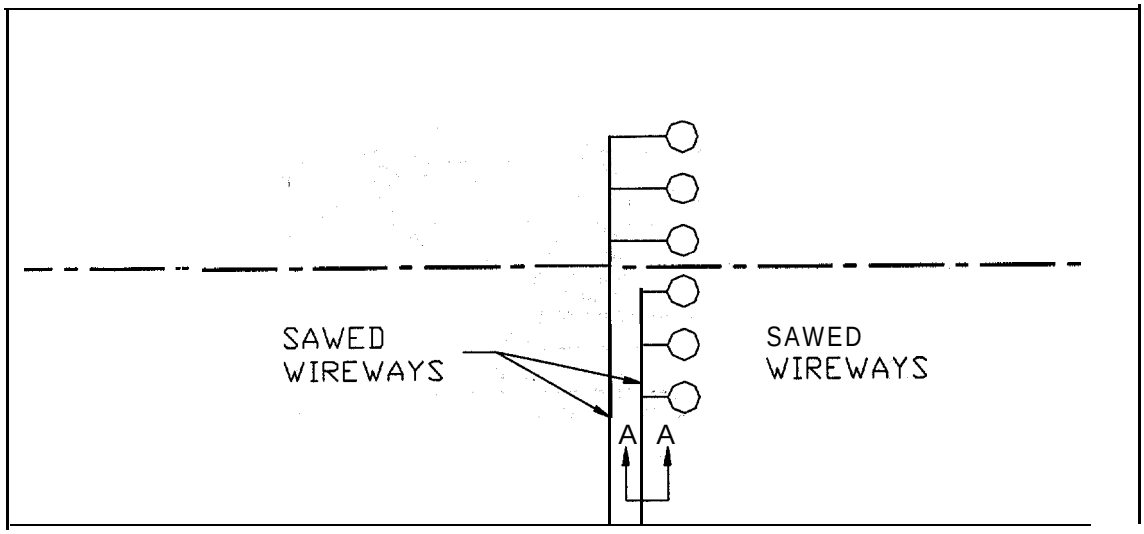
FIGURE 3. SECTION THROUGH BASE AND ANCHOR, BASE AND CONDUIT SYSTEM, RIGID PAVEMENT

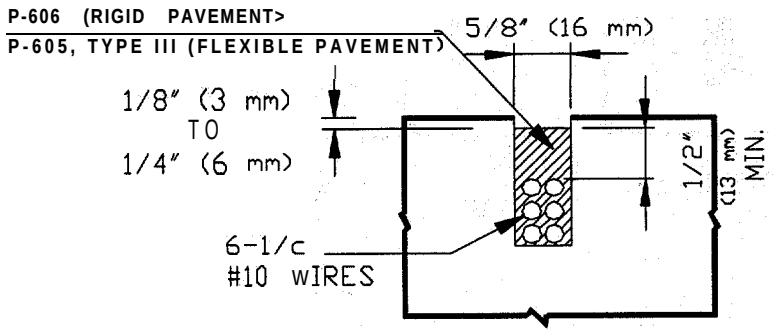


NOTE:

FLEXIBLE CONDUIT MAY BE CONNECTED TO THE BASE EITHER THROUGH A HUB OR GROMMET,

FIGURE 4. SECTION THROUGH BASE AND ANCHOR, BASE AND CONDUIT SYSETM, FLEXIBLE PAVEMENT





SECTION A-A

GENERAL NOTES

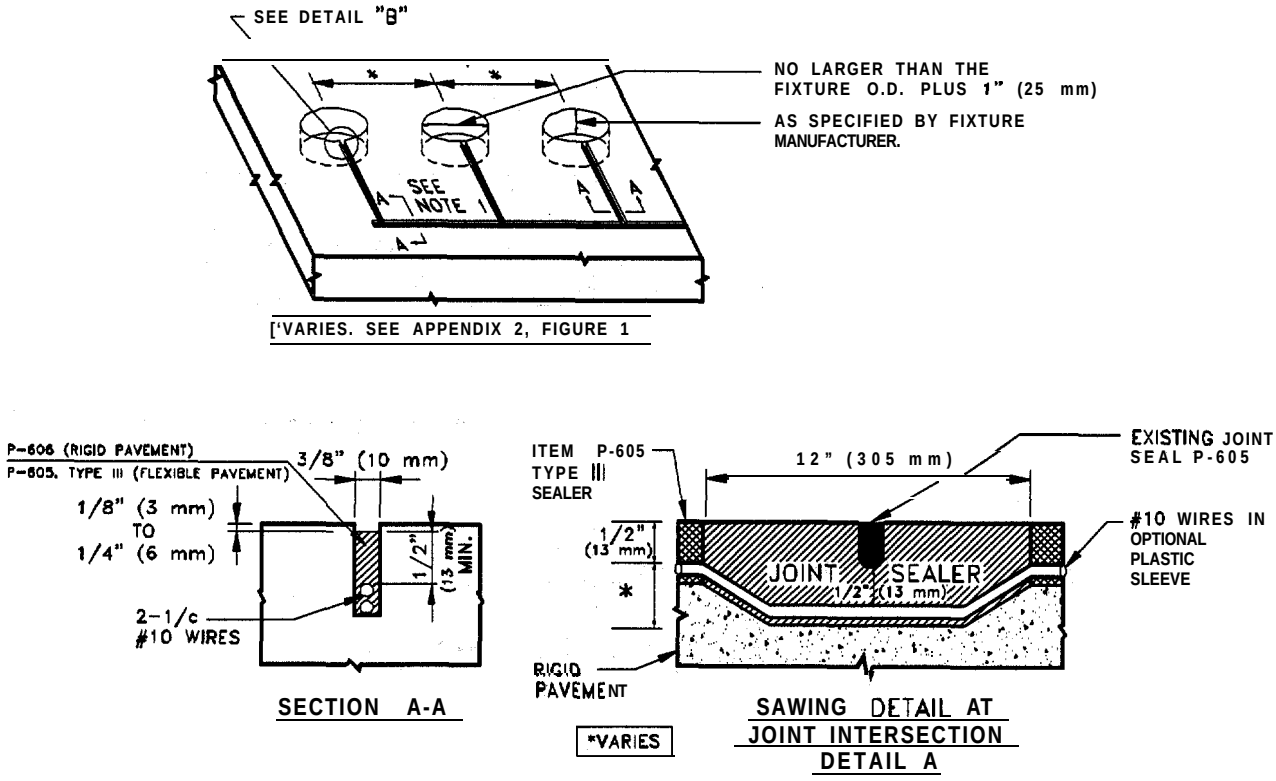
1. THE INSTALLATION DETAILS SHOWN ARE FOR RIGID OR FLEXIBLE PAVEMENT UNLESS OTHERWISE SPECIFIED,

2. THE DIAMETERS AND DEPTHS ❑ IF HOLES FOR DIRECT-MOUNTED LIGHTING FIXTURES ARE IN ACCORDANCE WITH FIGURE 6.

3, THE ALIGNMENT ❑F DRILLED HOLES FOR THE FIXTURES SH❑ULD NOT VARY MORE THAN 2 INCHES,

4. WHERE WIREWAYS CROSS JOINTS IN RIGID PAVEMENT, THEIR DEPTH IS INCREASED AS SHOWN ON PLANS, SEE FIGURE 6.

FIGURE 5. TYPICAL **WIREWAY** INSTALLATION DETAILS FOR LAND AND HOLD SHORT LIGHTS

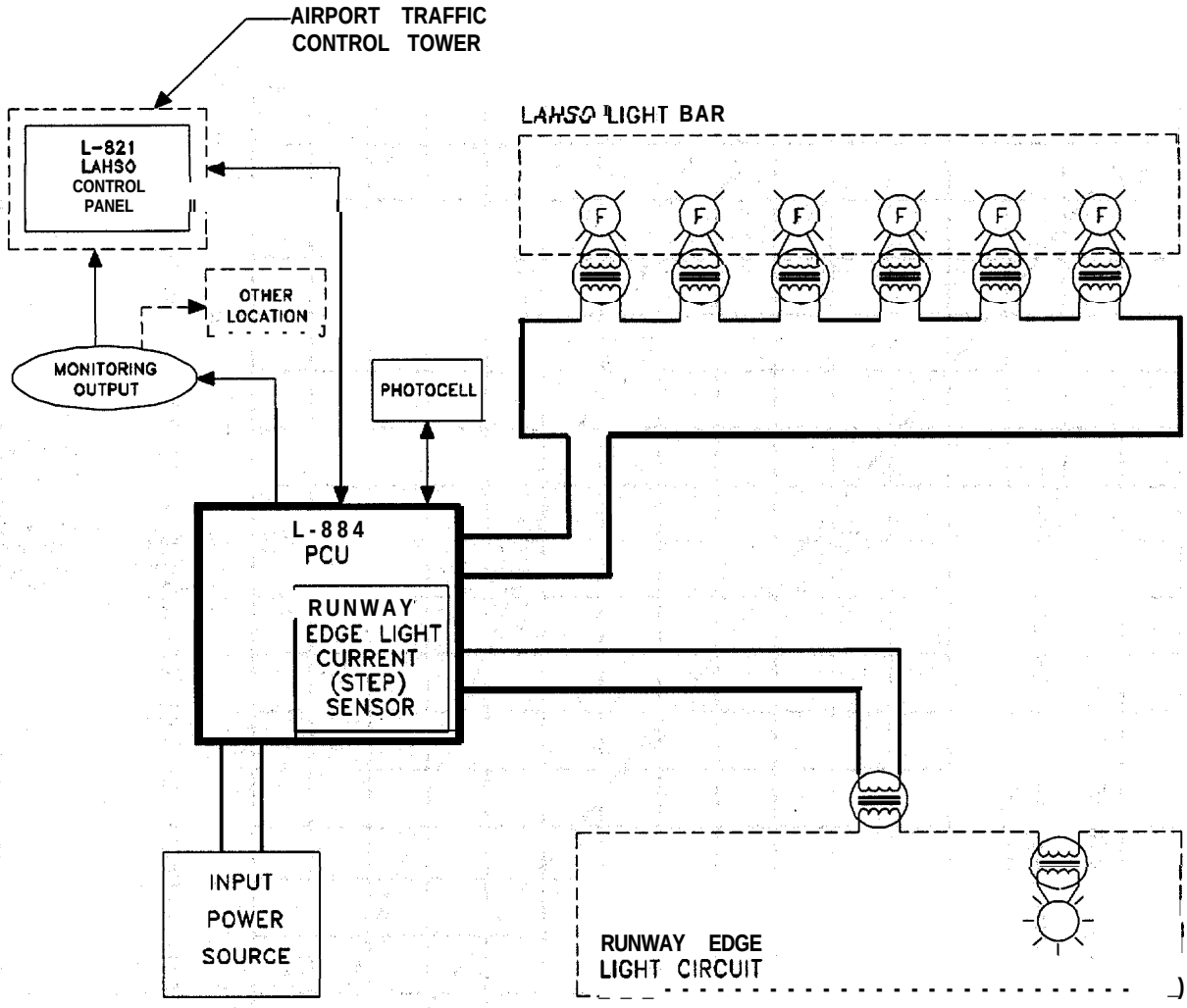


NOTES:

1. WIRES ARE NOT LESS THAN 1/2" (13 mm) BELOW JOINT SEAL COMPOUND.

2. DETAIL B IS FOR BASE-MOUNTED FIXTURES ONLY. USE SECTION A-A FOR DIRECT-MOUNTED FIXTURES.

FIGURE 6. SAWING AND DRILLING DETAILS FOR IN-PAVEMENT LAND AND HOLD SHORT LIGHTS



LEGEND

F — L-850A OR L-850F LIGHT FIXTURE

RUNWAY EDGE LIGHT

L-830 ISOLATION TRANSFORMER

FIGURE 7. TYPICAL BLOCK DIAGRAM FOR LAND AND HOLD SHORT LIGHTING SYSTEM

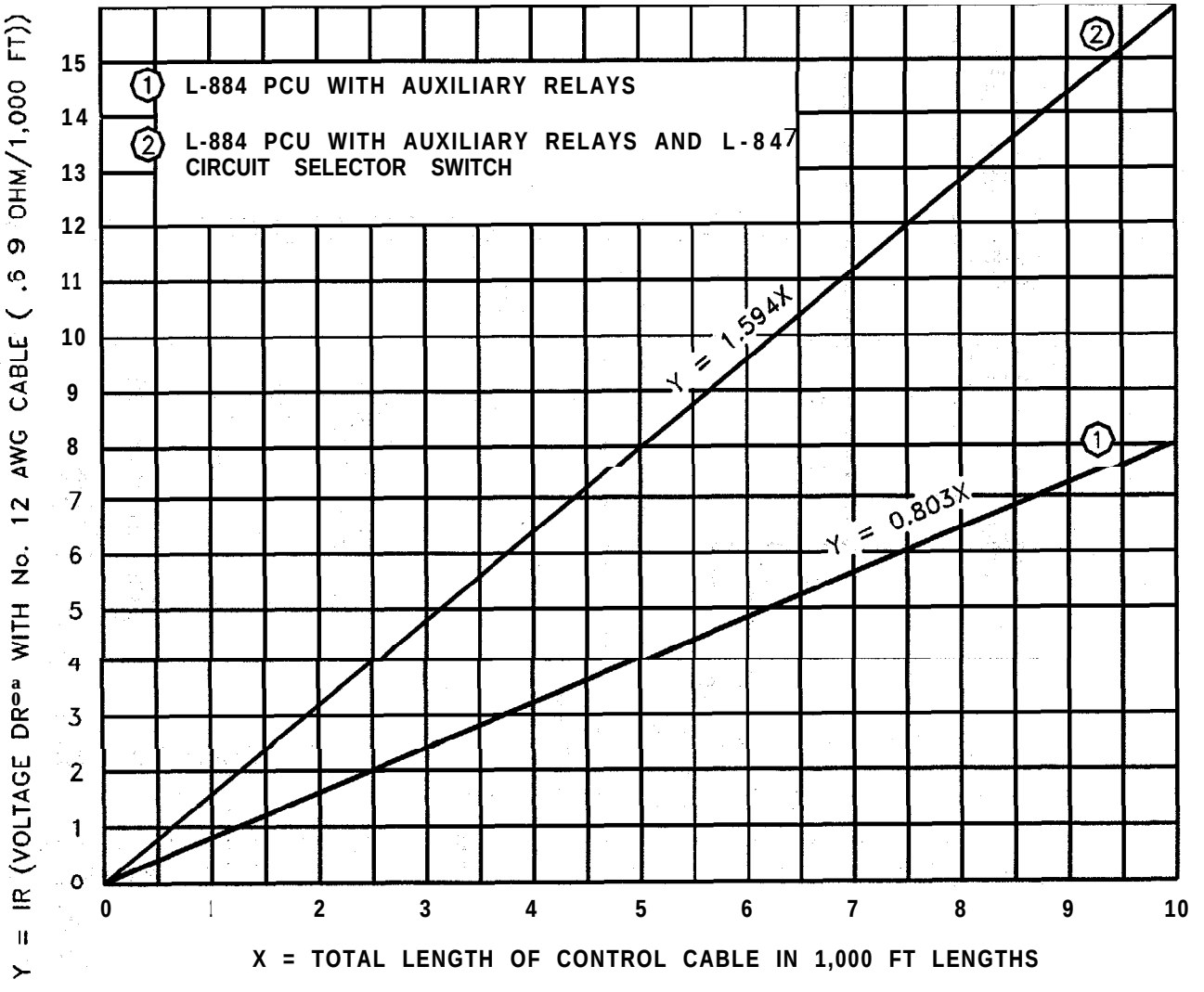
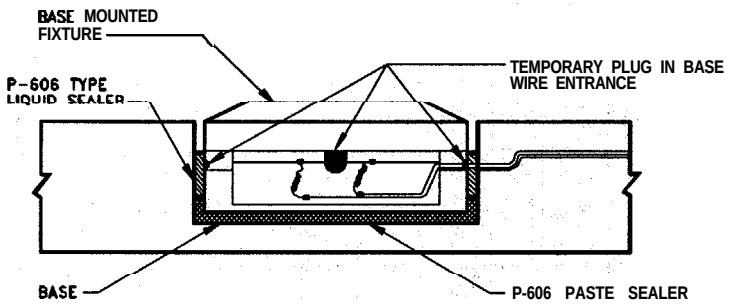
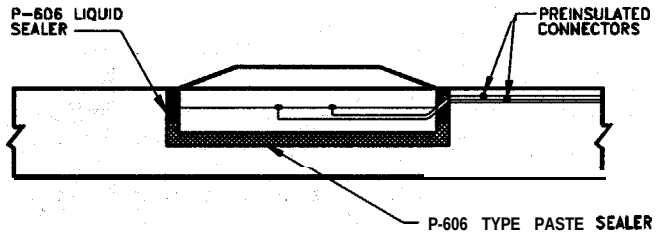


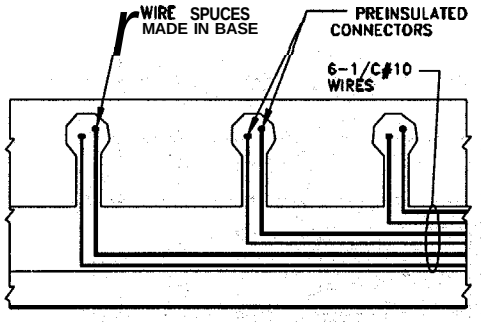
FIGURE 8. CURVE FOR DETERMINING MAXIMUM SEPARATION BETWEEN VAULT AND CONTROL PANEL WITH 120-VOLT AC CONTROL



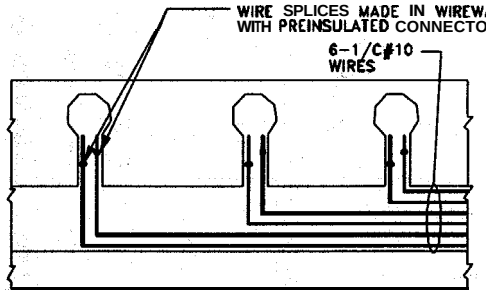
BASE-MOUNTED LIGHT ASSEMBLY



DIRECT-MOUNTED LIGHT ASSEMBLIES

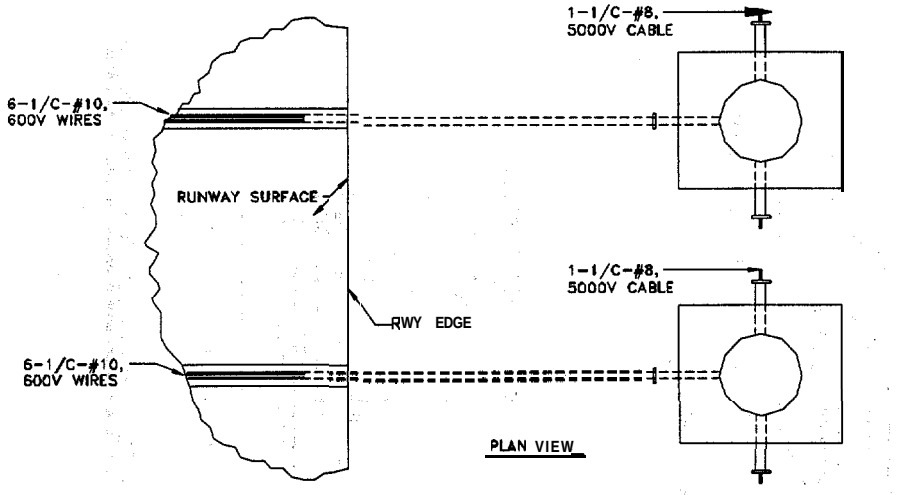


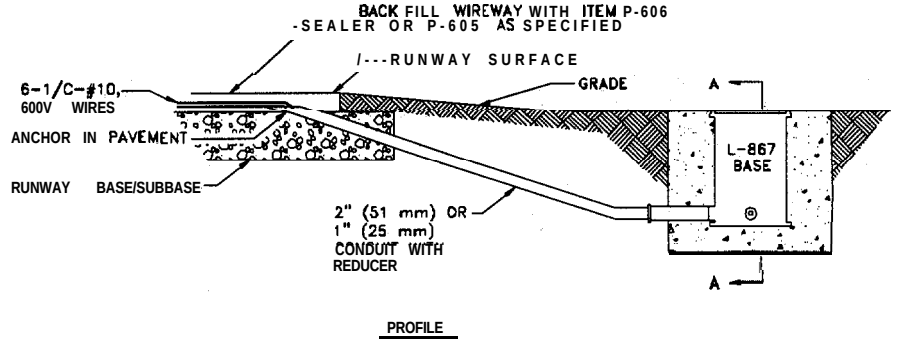
WIRING DIAGRAM FOR BASE-MOUNTED LIGHT ASSEMBLY

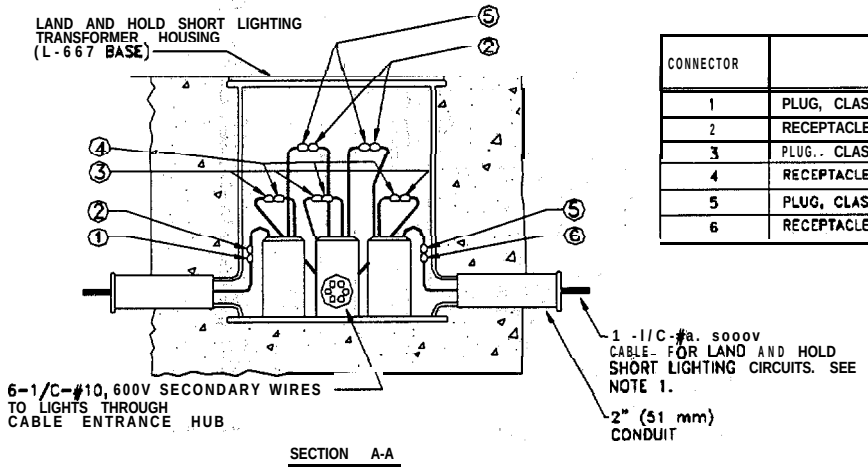


WIRING DIAGRAM FOR DIRECT-MOUNTED LIGHT ASSEMBLIES

FIGURE 9. WIRING DETAILS FOR DIRECT- AND BASE-MOUNTED LAND AND HOLD SHORT LIGHTS





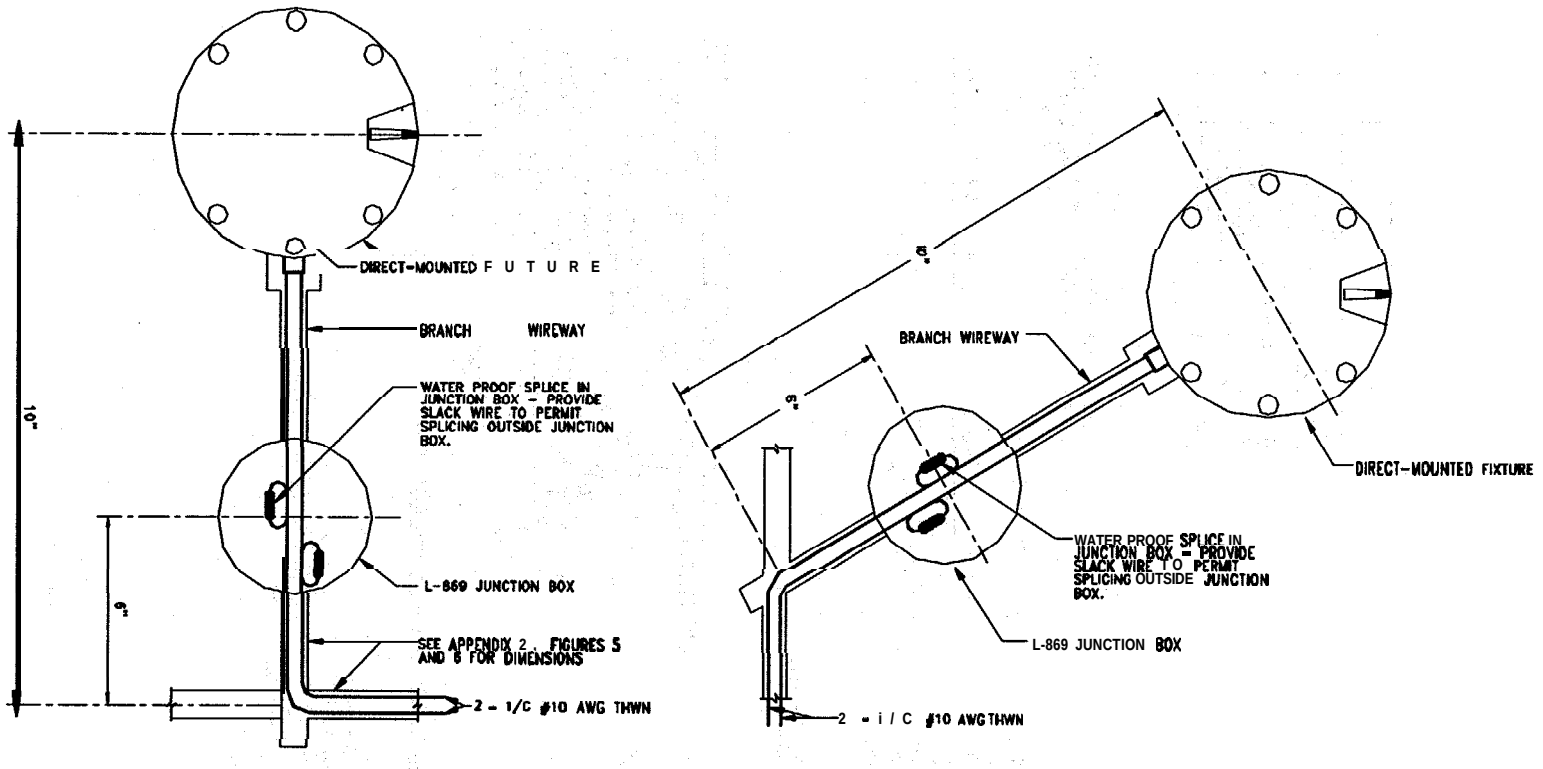


CONNECTOR	L-823 CONNECTORS SEE AC 150/5345-26
1	PLUG, CLASS B, TYPE I, STYLE 3
2	RECEPTACLE. CLASS A, TYPE I, STYLE 9
3	PLUG.. CLASS B, MPE II. STYLE 4
4	RECEPTACLE, CLASS A, TYPE II, STYLE 8
5	PLUG, CLASS A, TYPE I, STYLE 2
6	RECEPTACLE, CLASS B, TYPE I, STYLE 10

NOTES:

1. THE PRIMARY CABLES ARE INSTALLED IN ACCORDANCE WITH ITEM L-108 OF AC 150/5370-10.
2. THE L-867 TRANSFORMER HOUSINGS ARE INSTALLED IN ACCORDANCE WITH PARAGRAPH 8E.

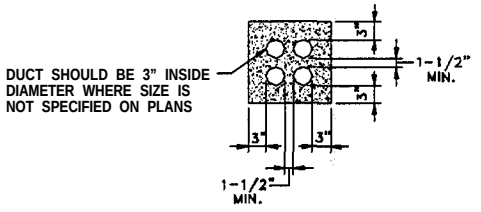
FIGURE 10. TYPICAL TRANSFORMER HOUSING AND CONDUIT INSTALLATION DETAILS WHERE ISOLATION TRANSFORMERS ARE INSTALLED AT RUNWAY EDGE



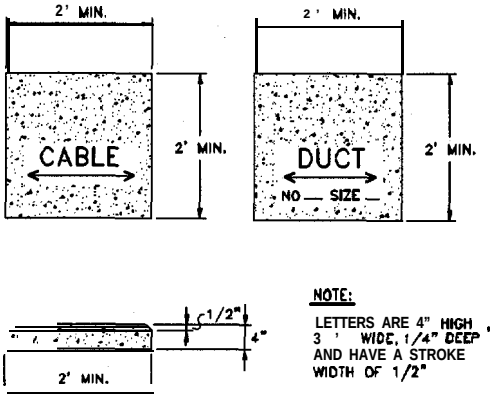
NOTES :

1. EITHER CONFIGURATION NAY BE USED. AS REQUIRED BY THE MANUFACTURER.
2. PROVIDE METAL TO METAL CDNTACT BETWEEN THE TOP COVER AND TN BASK OF THE JUNCTION BOX.
5. FILL JUNCTION BOX WITH A COMMERCIAL NON-SETTING MATERIAL THIS MATERIAL IS MO TO PREVENT WATER FROM COLLECTING IN THE JUNCTION BOX.
4. PROVIDE A SUITABLE GASKET AND GROMMETS TO CONTAIN NON-SETTING MATERIAL IN JUNCTION BOX.
5. INSTALL THE JUNCTION BOX LEVEL WITH THE SURROUNDING PAVEMENT.

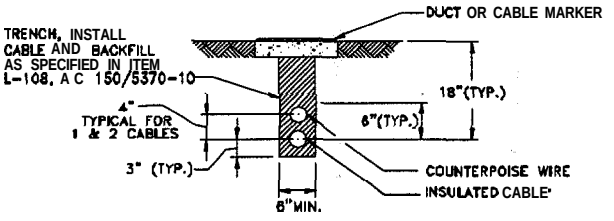
FIGURE 11. JUNCTION BOX FOR DIRECT-MOUNTED FIXTURE INSTALLATIONS



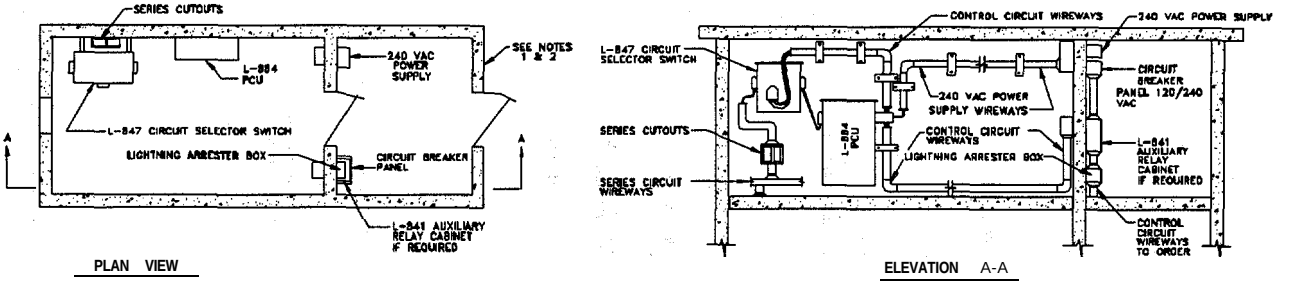
(A) TYPICAL 4-WAY DUCT DETAIL



(B) TYPICAL CABLE AND DUCT MARKER DETAIL



(C) TYPICAL TRENCH DETAIL AND WIRE PLACEMENT



(D) TYPICAL VAULT LAYOUT FOR TAXIWAY LIGHTING EQUIPMENT

NOTES:

1. VAULT CONSTRUCTION AND EQUIPMENT INSTALLATION ARE IN ACCORDANCE WITH THE NATIONAL CODE, LOCAL CODES, ITEM L-108 OF AC 150/5370-10.
2. AN ADEQUATE NUMBER OF LIGHTING FIXTURES AND ELECTRICAL OUTLETS SHOULD BE PROVIDED IN THE VAULT.
3. THE UNOERGRWNO ELECTRICAL DUCTS AND DUCT MARKERS ARE SPECIFIED IN PUNS. TIE INSTALLATION OF DUCTS AND MARKERS ARE IN ACCORDANCE WITH ITEM L-110 OF FAA AC 150/5370-10.
4. THE METRIC EQUIVALENT (IN mm) MAY BE FOUND BY MULTIPLYING INCHES BY 25.4.

FIGURE 12. TYPICAL VAULT, FIXTURE DUCT, TRENCHING, AND DUCT AND CABLE MARKING DETAILS

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